# STEWARDSHIP AND THE HEADWATER OPERATIONS

**Before and after pictures of shoreline restoration. The vegetation provides a natural barrier to erosion and can be used to beautify a property while providing habitat for birds, fish, and other animals.**

**Pictured are Pine River and Lake Winnibigoshish Dams which are operated in manner that creates unnatural water level conditions to their respective headwaters reservoirs and rivers.**

**What can citizens do to help the environment?**

Citizens can do three simple things:

1. Leave a natural strip of vegetation at the waters edge to minimize erosion.
2. Reduce the use of herbicides and fertilizers.
3. Limit removal of aquatic vegetation along the shoreline.



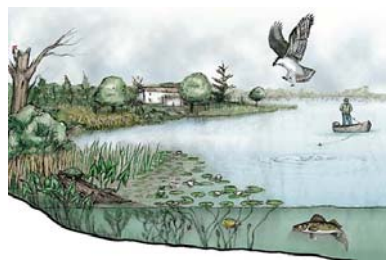

**What can the Government do to help the environment?**

The Government can do many things to benefit the environment beginning with:

1. Promoting smart growth with zoning that fosters sensitive habitats and improves water quality.
2. Instituting environmentally friendly operations of the seven Federal Headwaters reservoirs, which would help correct the current unnatural hydrologic cycle.
3. Providing information on land management to citizens and encourage them to take an active role in promoting the environment.

Stripcropping reduces erosion by planting in the contour of the land and alternating crops

**The lakes and reservoirs in Minnesota provide numerous opportunities for recreation from fishing to boating, nature watching, water-skiing, and canoeing. Whatever the activity, the lakes are a resource rich in opportunity for today and the future.**



**At a glance, the natural resources of the Headwaters of the Upper Mississippi River are in good condition. Fish and wildlife are generally abundant and the aquatic vegetation in most areas appears to be diverse and healthy. However, at closer inspection, it becomes apparent that there are areas of concern and the potential for improvement that can be accomplished by good stewardship of individual citizens and all levels of Government.**

**Since the late 1930's the reservoirs have been operated with increasingly stable water levels and to reduce downstream flooding. These deviations from a natural hydrologic cycle can lead to a number of problems for the aquatic community. The organisms living in the Headwaters have adapted their life cycles to coincide with the natural hydrologic cycle. The resulting environmental problems would have developed gradually and would often be subtle, but when taken together add up to major negative impacts. Furthermore, because of the interconnectedness of the aquatic community, an impact on one species or group can impact numerous others. For example, a decline in the vegetation would impact numerous species of fish, waterfowl, and mammals.**

**Of course the operation of the Headwaters reservoirs is not the only thing impacting the existing condition of the natural resources of the Headwaters. Human impacts such as development, shoreline modification, agriculture, and the introduction of exotic species all have negative impacts. This number of potential negative influences reinforces the need to improve conditions where the opportunity to do so exists.**

**The stewardship that is possible by citizens involves improved management of their land use (e.g., leaving a strip of natural vegetation along water bodies and streams, and strip-cropping to prevent erosion are measures farmers can use. Landowners along lakeshores and rivers can protect the natural vegetation on the bank and in the water, reduce the use of herbicides and fertilizers, and establish and enforce land use policy at the local-government level that will encourage smart growth, preservation of sensitive habitats, and improved water quality. Importantly - from the Federal Government perspective, stewardship also could take the form of instituting environmentally friendly operations of the seven Federal Headwaters reservoirs that would helpcorrect the current unnatural hydrologic cycle.**

**But if conditions are reasonably acceptable now, why should we go through the trouble of changing things to improve conditions? The answer to this can be found in examining what the future conditions of the Headwaters may be with and without changes. Within the ROPE this will be addressed more completely, but it is reasonable to assume that the increase in human pressure in the Headwaters will continue and will have an increasing negative impact on the natural resources. There is the potential for the loss of species, declines in fish stocks, degraded water quality, decreasing waterfowl numbers, and a general decrease in the resilience of the environment to absorb negative impacts. These negative environmental impacts would also have a negative effect on the economy, much of which is derived from outdoor-related tourism and recreation.**

**If the appropriate actions are taken now, the future condition of the Headwaters could be very different than above. A combination of good stewardship measures such as a return to more natural flow conditions, shoreline protection and restoration, and nutrient and pollution abatement would lead to improvements in the health of the aquatic ecosystem. This could in turn lead to improvements in fishing success, recreation, aesthetic values, and the economy of the region in the near future and for generations to come.**

Pictures were retrieved from the Minnesota Department of Natural Resources web page at www.dnr.state.mn.us